Analysis

Is recovery a myth?

International economy | 12 October 2016 | Juho Anttila

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Deep recessions have typically led to a permanent step down to a lower growth trajectory. However, since the financial crisis of 2008, the growth rate itself has also been exceptionally slow, due to weak growth in total factor productivity. In addition to the recession itself, the slow pace of recovery does, in fact, constitute a significant part of the overall costs of the crisis.

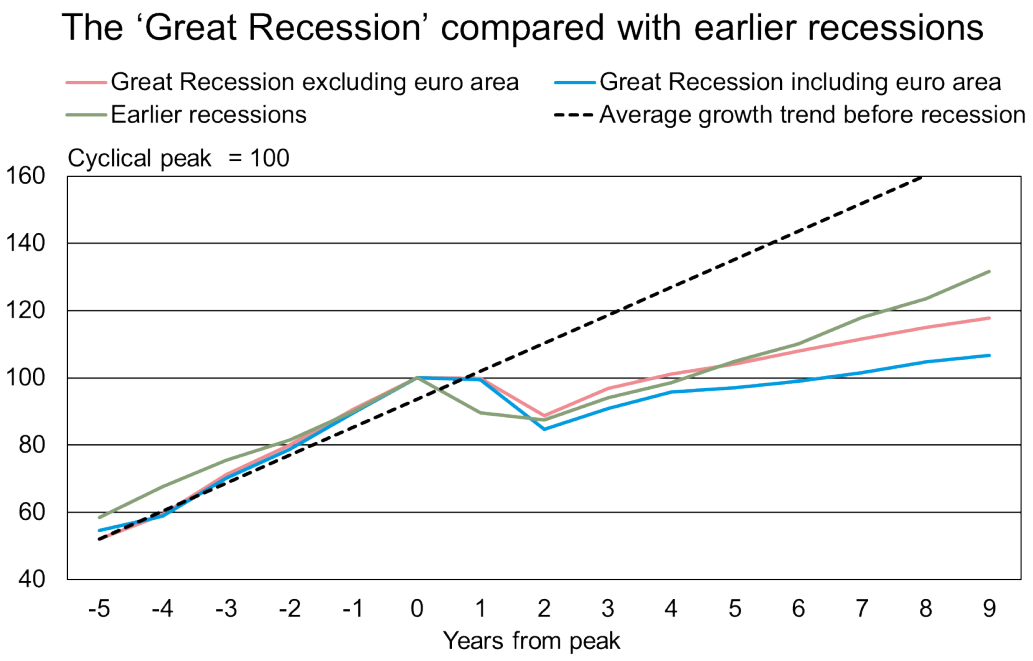


Long-term effects of recession

Business cycles are generally seen as temporary deviations from long-term growth trends. This view lives very strongly in basic text books on macroeconomics, but also in modern business cycle theory, according to which business cycles derive from shocks to the economy and rigidities and market disturbances that amplify the effects of these shocks. Alongside theoretical macroeconomics there has also emerged a broad range of empirical studies that have produced formalized facts on the effects of business cycles and economic crises on post-recession growth.

Reviews of financial crises and significant recessions often measure how long it takes to recapture the peak reached just before the recession. Reinhart and Rogoff, in particular, in their study from 2009 examine the impacts of economic crises on output in just this way. This approach does not, however, provide a complete picture of economic dynamics in the wake of a recession, as many other development trends are also possible (Chart 1). In the first scenario, a so-called 'traditional' recovery, once the trough has been reached, total output grows faster than trend. Here, the long-term growth trend is achieved before long. In the second scenario, the change in GDP level is permanent, whereupon the economy no longer returns to its previous growth path, even if the pace of growth does recover to accord with the previous trend. In the third scenario, the pace of growth in the economy also remains permanently slower than before.

Chart 1.



Sources: Conference Board and calculations by the Bank of Finland.
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These three scenarios differ significantly from each other. Although all three achieve the pre-recession GDP level at the same point (Chart 1), the slowdown in the post-recession pace of growth is considerably bleaker than the return to the pre-recession pace of growth or the growth trend. Insofar as a recession has an impact on the long-term pace of growth in the economy, a considerable part of the costs of recession come from the sluggishness of the recovery in addition to the recession itself. In other words, simply examining the time taken to reach the pre-recession peak does not determine the economic costs of the recession. Therefore, this article reviews the pace of GDP growth and the development of its various components both before and after a recession.

Based on our review, we can state that post-WW2 recessions in the advanced economies have on average been followed by a level-shift in the long-term growth path of the sort depicted in scenario 2 (Chart 1). The 2008 financial crisis, for its part, would seem, in addition to a level-shift, to have been followed by a permanent decline in the pace of GDP growth. This is largely explained by the weak trend in labour productivity, and especially total factor productivity. Weak growth in total factor productivity is a problem common both to those countries stuck in negative or zero growth in the wake of the 'Great Recession' (the term generally applied to the recession of 2008–2009) and to those countries that have experienced a stronger recovery.

These results are in line with empirical macroeconomic research, which has found abundant evidence of the long-term impacts of recessions. Cerra and Saxena's (2008) results demonstrated that economic crises typically cause a large, permanent level-shift in GDP, and Furceri and Mourougane (2012) observed a similar effect on the potential output of the economy. Meanwhile, Blanchard et al. (2015) showed that recession is typically followed by a permanent drop in the level of GDP compared with the pre-recession trend. They also observed that after almost one third of recessions the growth rate of the economy, too, was lower than the pre-recession trend growth rate.[1]

Less theoretical macroeconomic research has been conducted into the long-term effects of cyclical fluctuations, and therefore no clear explanatory model has been developed for post-recession shifts in GDP levels or growth rates. However, the 'Great Recession' of 2008 and the slow growth that followed it have led to an increase in theoretical research into this topic. According to both the prolonged slow growth (secular stagnation) model and cyclical endogenous technology models, short-term shocks can also impact on the long-term rate of growth.[2] In Eggertson and Mehrotra's secular stagnation model, an economy can, at the zero lower bound of interest rates, become stuck in an equilibrium of high unemployment and slow growth, whereas in Anzoateguin et al.'s cyclical endogenous technology model, negative demand shocks impact – via product development and the introduction of new technology – negatively on total factor

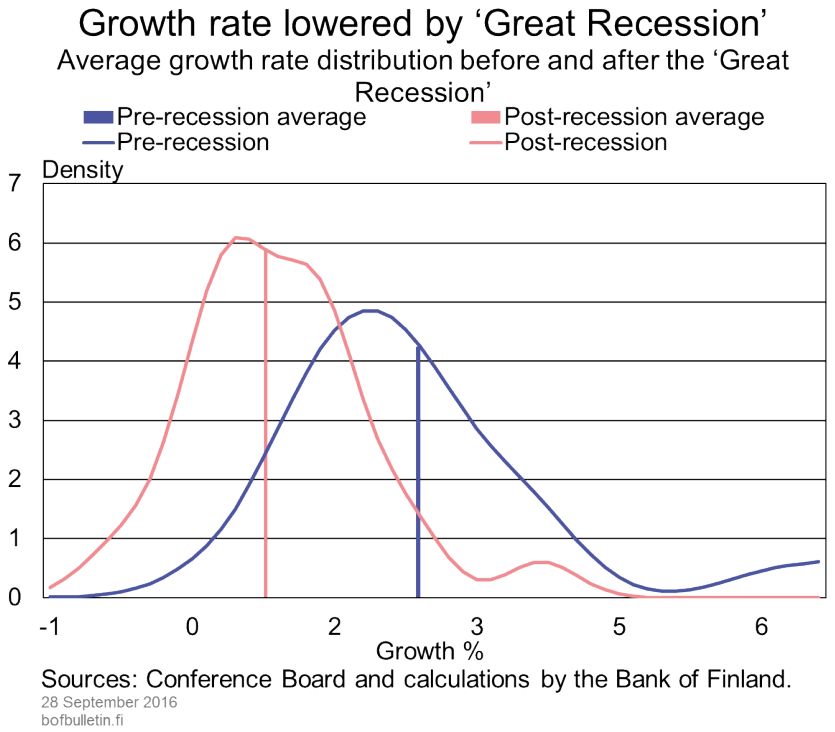
productivity.

Is the ‘Great Recession’ different?

This article compares the ‘Great Recession’ of 2008–2009 with other historically important recessions. The material used covers 42 recessions in 18 countries over the years 1950–2006 and the ‘Great Recession’ in 26 countries. When examining GDP figures dispersed across factors of production, the material is from a shorter period, 1990–2014. Our analysis, based on growth figures dispersed across factors of production, includes a broader set of countries and covers 14 recessions before the 2008 financial crisis as well as the ‘Great Recession’ in 43 countries.

Developments leading into recession and those following it are examined by calculating for each recession the average growth rate for the years preceding and subsequent to the peak of the cycle. These averages can be used to construct a time series for an economy’s GDP trend that illustrates how the economy developed before and after an average recession, and to present such time series for the ‘Great Recession’ and previous recessions (Chart 2). Each chart’s time series have been indexed so that the value of the GDP logarithm at its peak is 100 (for the ‘Great Recession’ this was in 2007). For the sake of comparison, we also present the linear trend pre-recession and a series in which the euro area countries have been removed from the set of countries that experienced the ‘Great Recession’. This series gives a more precise depiction of the impact of the 2008 financial crisis, as the impact of the euro crisis that followed it is less.

Chart 2.



Developments leading up to the pre-recession peak in 2007 was similar to earlier recessions: pre-recession GDP growth is according to trend, or faster, until it turns negative and the economy contracts (Chart 2). Immediately after the peak, the dynamics are also rather similar, but over the medium-to-long term two series clearly diverge from each other: in earlier recessions the economy returns, in accordance with scenario 2, to the pre-recession growth rate, albeit the pre-recession trend is not recaptured. In the 'Great Recession', by contrast, the economy is still growing at a slower pace eight years after the peak. The removal of the euro area countries from the data essentially affects only the level of the series: then, too, the pace of growth remains much slower than the pre-recession trend.

Development of GDP both before and after a recession can also be examined by studying how a country-specific average rate of growth has been changed by the recession. This can be illustrated by depicting country-specific average growth rates before and after the recession (Charts 3 and 4). In calculating the country-specific averages, the three years immediately preceding and following the peak have been omitted in order to remove the effects on the average of any possible overheating and the actual recession itself. The recessions have once again been separated out into the 'Great Recession' and other recessions.

The distribution graphs and statistical tests of the change in the average growth rate support the observation of a slowing in the pace of growth. While in earlier recessions the growth rate

distribution before and after recession is the same, for the 'Great Recession' the distribution shifts to the left on the graph (Charts 3 and 4). Thus, after the 'Great Recession', the economy has grown by an average of over one percentage point more slowly than the pre-recession growth rate.

Chart 3.

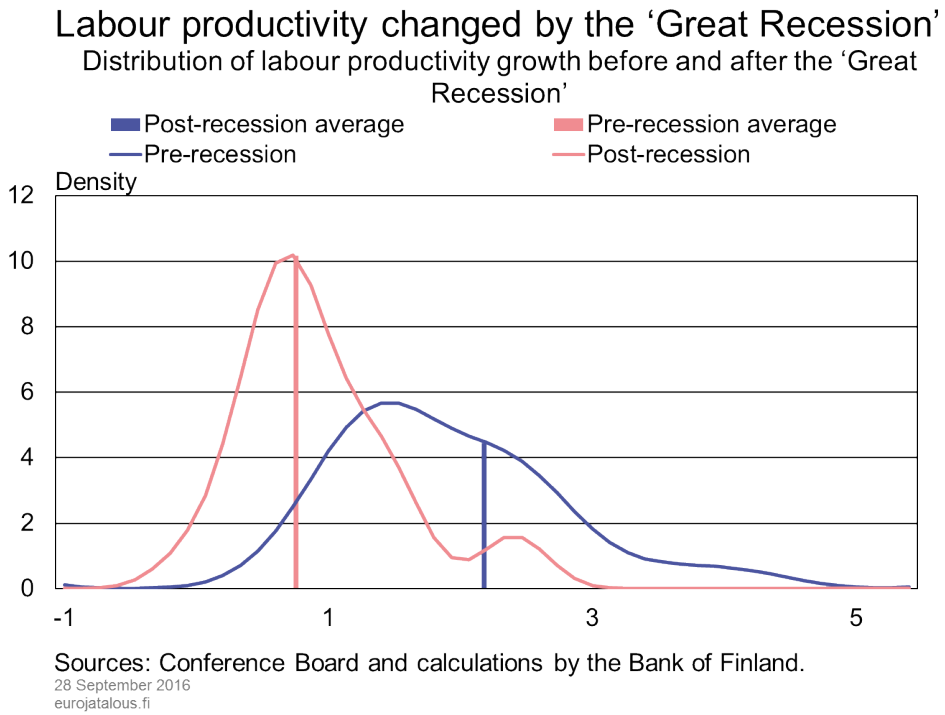
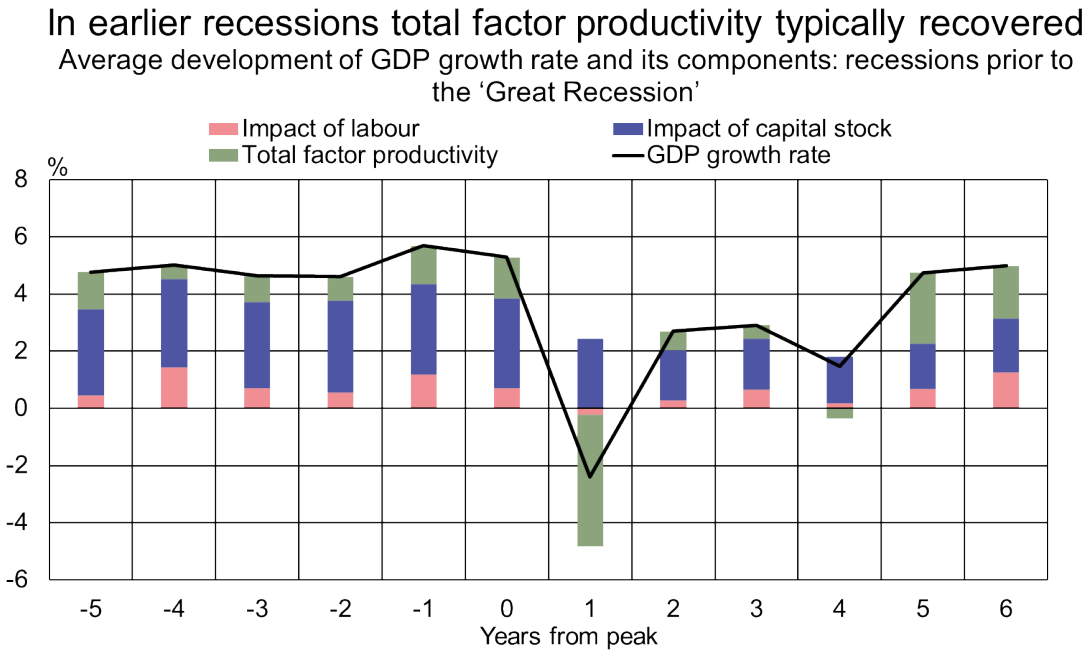


Chart 4.



Sources: Conference Board and calculations by the Bank of Finland.
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All in all, developments prior to the 'Great Recession' resemble those before earlier recessions, but the former has been followed by an exceptionally slow recovery. An examination of the growth rates reveals that, although scenario 2 (in Chart 1) is typical for most post-WW2 recessions, the 2008 financial crisis has rather followed scenario 3, with a permanently weakened growth rate. Some of the slow growth can be attributed to the sovereign debt crisis in the euro area, but even if the euro area countries are removed from the data, the outcome still applies. This would suggest that the euro area debt crisis alone cannot explain the slow pace of growth since the 'Great Recession', although it is clear that its negative economic effects do also extend beyond the euro area.

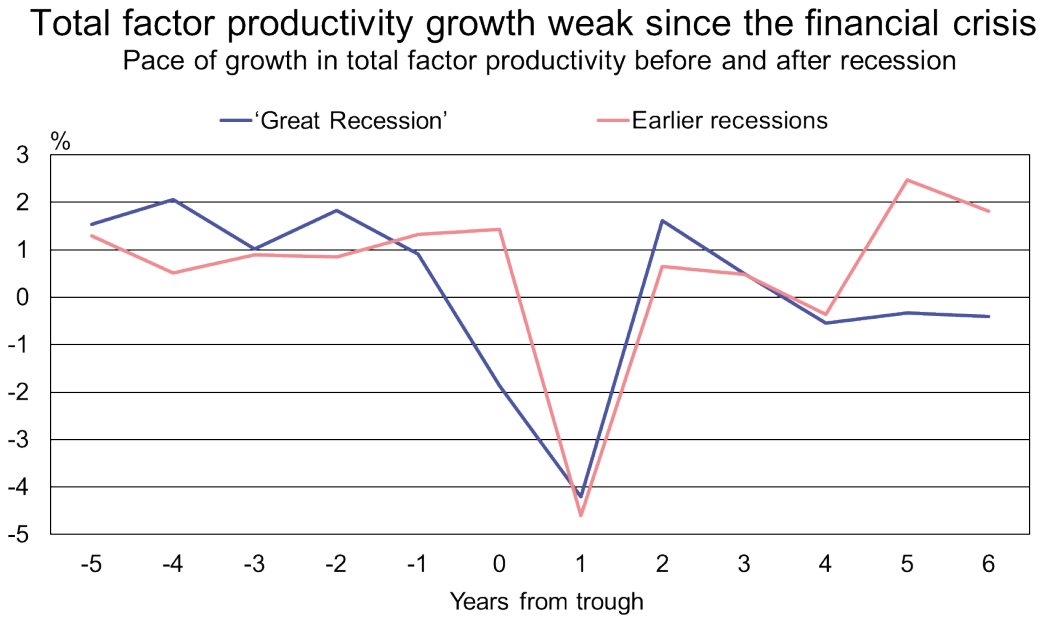
Weak total factor productivity key explanatory factor

Economic growth can be analysed as the sum of labour input and its productivity. Labour productivity is simply GDP divided by the hours worked or the number of persons employed. If data is also available on the capital stock, GDP growth can be more precisely broken down into labour and capital components and total factor productivity. Considering labour productivity or the development of other factors of production provides more detailed information on the factors behind the slower pace of growth than we get by simply looking at the GDP growth figures on their own.

Labour productivity development before and after recession

By examining labour productivity we can estimate the extent to which the slow post-recession growth is due to a decline in labour and to what extent it can be attributed to weak productivity development. Below, we present a country-specific distribution of average labour productivity before and after recession (Chart 5 and 6). The cases have been divided into recessions prior to the 'Great Recession' and the 'Great Recession' itself. We have also once again removed from the data the three years immediately preceding and immediately following the pre-recession peak.

Chart 5.

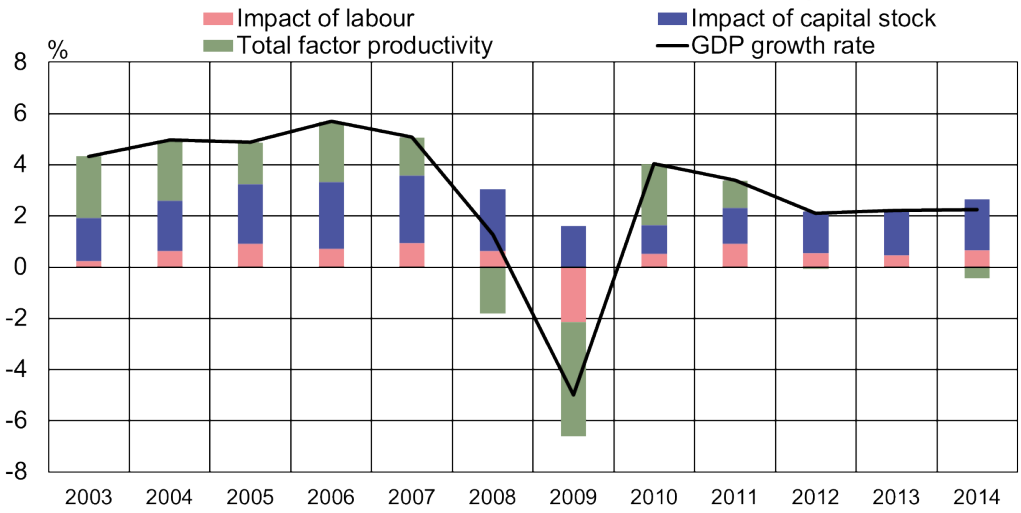


Sources: Conference Board and calculations by the Bank of Finland.
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Chart 6.

Total factor productivity development absent also in more rapidly recovered economies

Development of GDP growth rate and its components before and after the 'Great recession' in countries that recaptured their 2007 level by 2014



Sources: Conference Board and calculations by the Bank of Finland.
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Moreover, in earlier recessions, labour productivity remains largely stable both before and after the recession, whereas the productivity growth rate around the 'Great Recession' shows a clear change in level (Charts 5 and 6). The statistical tests also support the change in the level of the growth rate visible in the charts. In addition, we can see that the distribution of productivity growth after the 'Great Recession' is much narrower than before it. This means that the country-specific variation in the pace of productivity growth has declined. These outcomes suggest that there is perhaps some common determinant behind the slow productivity growth experienced in the advanced economies.

Changes in labour productivity can be a sign of many different phenomena: a lack of investment can have caused a shrinkage in the capital stock or workers' skills can have deteriorated due to prolonged unemployment. On the other hand, it could be that the production technology has not been developing as rapidly as before. Explanations based on these different factors differ not only in terms of the consequent forecasts, but also with regard to possible policy recommendations, which is why a depiction of productivity development rooted in growth accounting is essential.

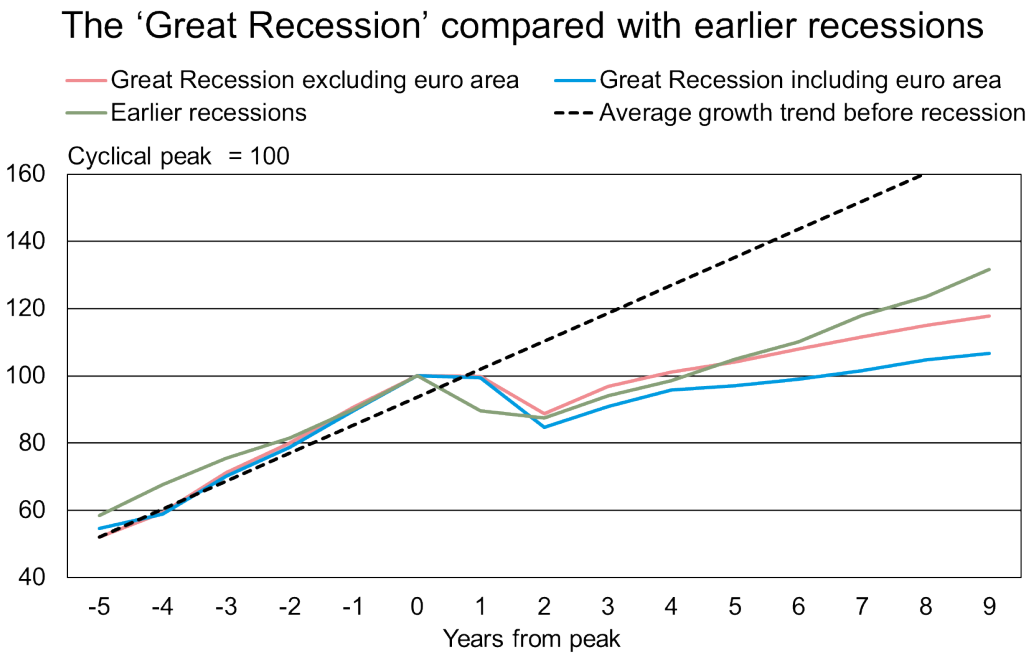
Development of GDP growth factors before and after a recession

How individual factors of production influence GDP growth can be estimated using growth accounting. In growth accounting, economic growth is in practice broken down into the impacts of

the various factors of production by using labour and the capital stock and weighting them according to their shares of aggregate income. The remaining portion, total factor productivity, comprises the factors that growth in labour and capital volumes alone does not explain: total factor productivity is typically interpreted as advances in production technology.

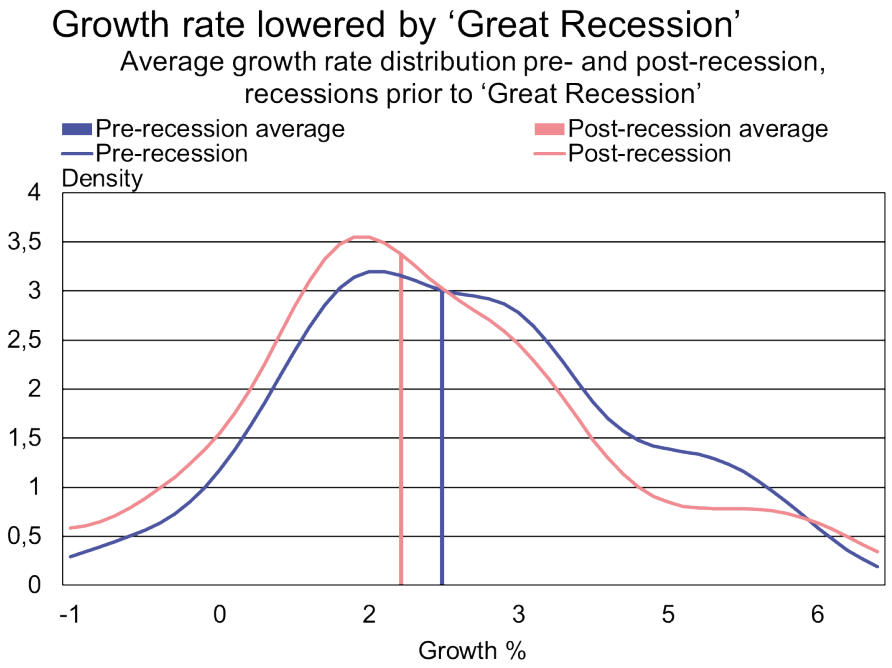
Next we turn to GDP growth and the impact of various production factors on its growth rate, once again presented separately for the 'Great Recession' and other recessions (Charts 7 and 8). For this purpose we have calculated average values for the various production factors for each year preceding and following the pre-recession peak. Our examination (Charts 7 and 8) shows us how individual factors of production have developed during the different phases of a recession and what their impact has been on the change in the average GDP growth rate.

Chart 7.



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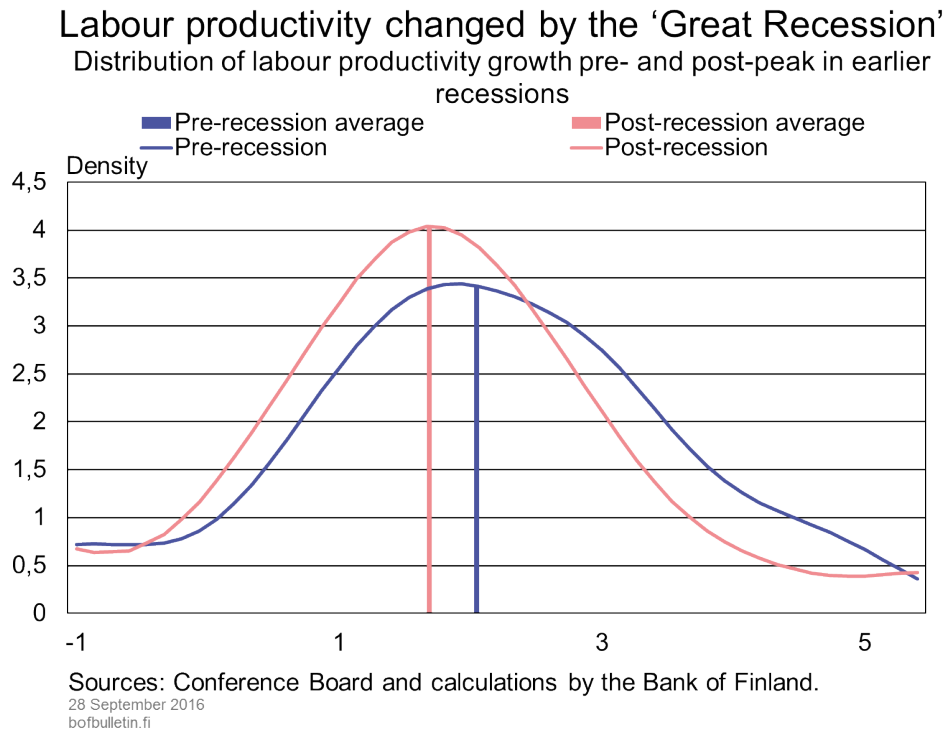
Chart 8.



Pre-recession developments are very similar in both cases: the influence of each factor of production remains fairly stable. A significant difference does, however, emerge after the peak, when the recession begins. In the first place, in the ‘Great Recession’, the drop in labour is much greater, reflecting the recession-related collapse in output and consequent unemployment. Another striking difference is to do with total factor productivity, which during the ‘Great Recession’ develops slowly or actually declines even several years after the trough of the recession has passed.

Our examination of the average growth rate of total factor productivity shows it has been weak, actually negative, since the 2008 financial crisis, whereas in earlier recessions on average total factor productivity growth figures were achieved that even exceeded pre-recession levels (Chart 9).

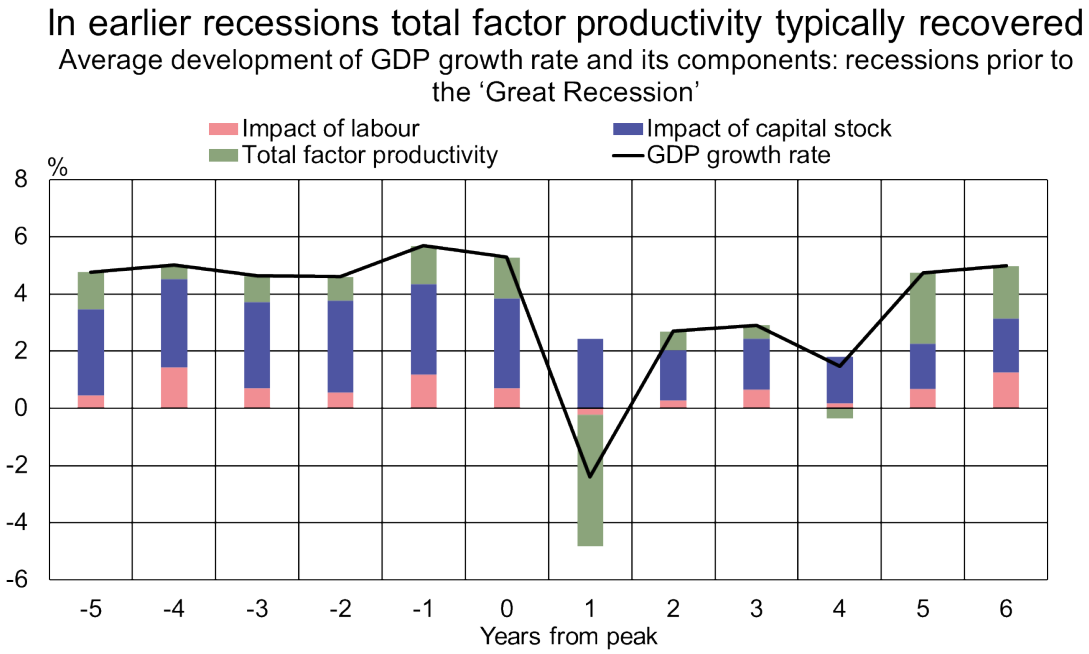
Chart 9.



Can this weak total factor productivity development reflect merely the euro crisis or the weak condition of some individual countries? For an answer to this question we examine the development of the impacts from factors of production in those countries that recaptured their pre-'Great Recession' peak by 2014 (Chart 10). It turns out that even in these countries total factor productivity development is similarly absent or even negative. Thus, productivity development is a problem also in those countries that have recovered from the financial crisis better than the distressed countries.

The slow GDP growth in the wake of the 'Great Recession' is explained by the exceptionally sluggish development of labour productivity compared with earlier recessions. The path of labour productivity is, in turn, primarily attributable to weak or even negative total factor productivity development. Weak total factor productivity development is a common phenomenon globally and has also affected those countries that recovered better from the 'Great Recession', not only those that have become stuck in a period of prolonged negative or zero growth.

Chart 10.



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Several causes proposed for weak growth

Our results suggest that a key component of the slow GDP growth since the 'Great Recession' is the sluggishness of labour productivity growth in recent years. A large part of this, in turn, can be explained by the absence or even negative development of total factor productivity. Weak productivity growth is a problem that affects both those economies that have recovered reasonably well from the 'Great Recession' and those still stuck in zero or negative growth.

Because total factor productivity measures an unexplained component of economic growth, it is hard to extract the basic cause of the slow productivity growth from thoroughly aggregated growth figures. As well as technological advances, total factor productivity also includes within itself measurement errors in the recorded volume of capital, an economy's ability to exploit existing technology and other indiscernible factors. Based on theory and on more detailed material, it is, however, possible to estimate the factors that have contributed to the weakness of productivity development. A number of explanations have been offered for the slow pace of growth, some to do with the financial crisis and some to do with other factors.[3]

As a consequence of the 2008 crisis, the availability of external funding for non-financial corporations was considerably weakened, which reduced corporate investment.[4] Credit

restrictions and the consequent scarcity of capital investment were reflected above all in the weak contribution of capital growth: the impact on total factor productivity is less clear, if still possible e.g. due to a reduction in investment in human capital or product development. On the other hand, there have recently been numerous views expressed according to which we could be experiencing a longer-term slowdown in total factor productivity development – at least relative to the exceptionally rapid years in the 1990s – a slowdown that began prior to the financial crisis.[5] According to the most pessimistic assessments, current technical innovations are less significant than previous ones, and we are therefore entering a period of prolonged slow productivity growth.[6]

Since the recession, weak total factor productivity growth has also been a problem for economies with more positive economic growth, while in addition inter-country differences in the pace of labour productivity growth have narrowed. This would suggest that behind the weak growth there lie factors independent of the financial crisis, particularly as the trend has continued since the bottoming out of the 'Great Recession' seven years ago. The 2008 financial crisis was, however, a rare event in postwar history. There have only been a few other genuinely global financial crises, and they happened before the Second World War. An additional background factor in the euro area has been the prolonged sovereign debt crisis, which has also had negative consequences for the entire global economy.

A period of exceptionally slow growth

Deep recessions and financial crises are typically followed by a permanent step down to a lower growth path. In the case of the 'Great Recession' of 2008 there has additionally been a period of slow post-recession growth, unique in comparison with other post-WW2 recessions. Sluggish growth has also plagued those economies that returned to growth after the financial crisis. If the slow growth is believed to stem from the 'Great Recession' itself, then it can be said to have substantial long-term costs in addition to the short-term ones. In light of the data presented here and the previous research literature, the rapid recovery often posited in basic macroeconomics textbooks would appear to be rather rare, at least in the case of deep recessions. In actual fact, economies rarely return to their previous growth path following a deep recession.

Behind the slow growth since the 'Great Recession' we can also discern the weak productivity development of recent years, which is the key explanatory factor behind the sluggish GDP growth. Fading productivity growth is a global phenomenon, and no-one has yet been able to suggest a clear reason for this. Several different explanatory models have been offered, some rooted in the financial crisis and some in factors independent of the financial. The relatively long period since the financial crisis and the universality of weak productivity growth across a range of countries

would, however, suggest that we could be dealing with a longer-term trend of slower productivity growth.

The final truth of how economies will come to recover from the 'Great Recession' is likely to be clear only several years from now. However, even now we have already seen that recovery has been exceptionally slow and the effects of the financial crisis will still be visible well into the future. The economic effects of prolonged sluggish growth are, after all, at least as significant as the immediate drop following the peak of the business cycle.

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Notes

1. Blanchard et al. (2015). ↑
2. Eggertson – Mehrotra (2015) and Anzoateguin et al. (2016). ↑
3. Explanatory models for weak growth are examined in more detail in e.g. Haavio (2016). ↑
4. Campello – Graham – Harvey (2010) and Duchin – Ozbas – Sensoy (2010). ↑
5. Fernald (2014). ↑
6. Gordon (2012). ↑

Keywords

economic growth, financial crisis, productivity, recession